

June 16, 2003

TO: Internal File

THRU: Peter H. Hess, Environmental Scientist/Engineering, Team Lead

FROM: Jerriann Ernstsens, Environmental Scientist/Biology
Susan M. White, Environmental Scientist/Biology

RE: Response to Division Order DO00A, West Ridge Resources, Inc., West Ridge Mine, C/007/041-DO00A-7

SUMMARY:

The Division issued a Division Order to West Ridge Resources, Inc to submit as-built drawings and a detailed back filling and grading plan. The construction of the mine site varied substantially from the approved construction design. After several submittals the Permittee now proposes to reclaim the portal highwall to a 40-degree slope. This memo reviews information submitted March 14, 2003.

TECHNICAL ANALYSIS:

RECLAMATION PLAN

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

TECHNICAL MEMO

General requirements

The permittee proposes to reclaim the highwall area to a 40-degree slope angle. The undisturbed slope above the highwall has a 32-degree slope angle. The Permittee plans to:

- Apply a geotextile material for stabilization.
- Apply compacted backfill.
- Apply growth media of three feet of uncompacted back fill and one foot of topsoil.
- Arrange boulders with 1/100 square foot irregular spacing.
- Scatter rocks less than 6" diameter on the surface.
- Roughen and gouge the surface in a random pattern. The dimensions for the gouges are 12-18" deep x 2-4' wide. A backhoe will prepare most of the gouges, however, staff with hand shovels will prepare gouges in particularly difficult areas.
- Apply Biosol 6-3-1 slow release fertilizer at a rate of 1500 pounds per acre.
- Hydroseed with the mulch: See Table 5 for rate and seed mixture.
- Apply bonded fiber mulch applied at a rate of 3500 pounds per acre.
- Plant containerized woody plants at a rate of 2500 plants per acre or one plant every 4.27 foot.
- Plant containerized Douglas fir (5-6') at a rate of 145 trees per acre with 1/300 square foot irregular spacing.
- Use diverter logs for erosion control, if needed.

To allow for proper root growth, the soil surface of three feet of backfill and one foot of topsoil will not receive compaction. The Division's experience has shown that steep slopes require extreme roughening to provide sites for seed germination and growth and erosion control. The information presented provides adequate detail for the degree and amount of roughness.

Boulders, smaller rocks, and diverter logs may provide microsites for plant growth. The Permittee mentions diverter logs are optional, but if used, the logs will come from nearby Lodge Pole pines (pg. 16). The Permittee may want to consult with the Division prior to removal of logs. The Division will consult with related agencies to determine the best measures for the Permittee to take to disturb the smallest practicable area (see R645-301-331).

Biosol fertilizer slowly releases the nitrogen, phosphate, and potassium over a period of two years (Patrick Collins, personal communications 4-17-03). The Permittee should realize that the release of fertilizers might not occur during plant growth, which would result in the leaching of fertilizer, especially nitrogen. Furthermore, fertilizers may not be the most limiting plant growth factor. Plants grow in proportion to the most limiting factor, which for West Ridge may be water.

The Division has concern that the plants may not grow maximally or survive in the backfill. The soil chemistry for the backfill shows that the EC is 6.84 and the SAR is 8.2. These numbers are considered “fair” according to the Division’s soil guidelines. The Permittee, however, must be aware that there is a chance of marginal plant growth especially for the containerized plants. The Division recommends that the Permittee apply one foot of topsoil over the backfill and plant a few containerized plants of each listed species near the warehouse. The warehouse pad is located on top of the same backfill as the three-foot of backfill planned for the reclamation project. Planting “test” plants may provide valuable information as to whether the containerized plants will survive the high salinity concentrations of the backfill.

The Division is skeptical about revegetating slopes this steep. The Permittee provides three reclamation examples of sites with similar angles of repose:

1. Mesa Verde: vegetation cover approaching background.
2. Cottonwood fan portal with vegetation cover approaching 50%.
3. Third example: limited comparative information provided.

If the highwall slope were reduced, the roughened growing surface would provide greater stability and may support more vegetation coverage. Reducing the slope, however, may affect the experimental practice. The Permittee will need to modify the MRP if the experimental practice is affected.

Findings:

Information provided in the application is considered adequate to meet the minimum Revegetation requirements of the regulations.

RECOMMENDATION

The amendment should be approved.